

REMARKS

Claims 1-12 and 14-23 are currently pending in the present application.

Claims 1, 14 and 23 have been amended, without prejudice to the filing of one or more continuing applications directed to the previously presented subject matter thereof, to more specifically refer to and particularly point out various embodiments of Applicants' claimed invention. Specifically, claim 1 has been amended to specify that the fresh sol comprises an aqueous system having an SiO<sub>2</sub> content of 4 to 8 % by weight and a pH of 2 to 4. Support for the amendment to claim 1 can be found in the Specification, for example, at page 5, lines 5-9. Claims 14 and 23 have been amended to specify that the claimed sol comprises from 0.05 to 15% by weight of guanidinium ions **and** up to 15% by weight of SiO<sub>2</sub>. Support for the amendments to claims 14 and 23 can be found in the Specification, for example, at page 9, lines 19-32.

No new matter is introduced by the amendments made herein. No additional claims fees are necessitated by the amendment made herein. Furthermore, a complete listing of all claims ever presented is set forth herein in accordance with 37 CFR §1.121(c)(1). Accordingly, entry of the amendment made herein and consideration thereof are proper and respectfully requested.

Claim Objection:

In the new Office Action, the Examiner objects to claim 15 as being dependent upon canceled claim 13. Applicants respectfully submit that claim 15 depends from claim 14, not claim 13, as reflected in the Listing of the Claims presented herein. Specifically, claim 15 was amended on February 23, 2009, by Examiner's Amendment, as noted in the Notice of Allowance dated February 23, 2009, at page 2 thereof. Thus, claim 15 properly depends from claim 14. Removal of the objection is respectfully requested.

Rejection Under 35 U.S.C. §112, 2<sup>nd</sup> Paragraph:

In the new Office Action, the Examiner rejects claim 4 under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Examiner contends that claim 4 is indefinite because the claim recites "a reaction temperature," and it is not clear to the Examiner

what temperature is being claimed. Applicants respectfully traverse the Examiner's rejections under 35 U.S.C. §112, second paragraph, for at least the following reasons.

Applicants respectfully submit that the Examiner's rejection is improper. Moreover, Applicants note that the same rejection had been made, traversed AND WITHDRAWN in previous prosecution. Nonetheless, Applicants reiterate their prior, successful traversal arguments, as follows. Claim 4 of the instant application reads:

“The process of claim 2, wherein the reaction is carried out at *a* reaction temperature at a pH of from 8 to 12, the pH being measured at *the* reaction temperature.”  
(Claim 4, *emphasis added*).

Applicants respectfully submit that the recitation of “*a*” reaction temperature in claim 4 is not indefinite, and merely provides *proper antecedent basis* for the recitation of “*the*” reaction temperature in the subsequent clause of the claim. Applicants clearly describe suitable reaction conditions for the various embodiments of the instant invention, for example, at page 5, lines 25-29 of the Specification, wherein the pH, measurement thereof and suitable exemplary reaction temperatures are described. More specifically, the Specification states that the reaction is carried out, for example, at a temperature of from 25°C to 100°C. *Applicants respectfully submit that no particular temperature is being claimed in claim 4.* The recitation of *a* reaction temperature simply provides proper antecedent basis for *the* temperature *at which the pH is then measured*. In other words, the temperature can be any suitable temperature at which the reaction can be carried out. The reference to the reaction temperature is merely that temperature at which the pH is measured, and that pH must be 8 to 12, as set forth in the claim. Applicants respectfully submit that there is no lack of clarity in the use or recitation of “*a*” reaction temperature. In fact, the claim would be less clear if the phrase were not used to provide the proper antecedent basis for the remainder of the claim. Reconsideration and withdrawal of the rejection in this regard are respectfully requested.

Applicants respectfully submit that all pending claims fully comply with the requirements of 35 U.S.C. §112, second paragraph. Accordingly, reconsideration and withdrawal of the rejection are again requested.

Rejections Under 35 U.S.C. §102:

In the new Office Action, the Examiner rejects claims 14-21 and 23 under 35 U.S.C. §102(b), as being anticipated by U.S. Patent No. 5,603,805 of Andersson, *et al.* (“Andersson”). Additionally, the Examiner rejects claims 14-20 and 23 under 35 U.S.C. §102(b), as being anticipated by British Patent No. 1202303 (“GB ‘303”)<sup>1</sup>. Applicants respectfully traverse each of the Examiner’s anticipation rejections and the arguments and contentions set forth in support thereof for at least the following reasons.

Applicants respectfully note that claims 14-21 and 23 were previously rejected over Andersson, that rejection was traversed, the rejection was withdrawn and the claims were allowed. (*See, e.g.*, the Office Action dated July 19, 2007, ¶ 5; Request for Pre-Appeal Brief Review dated January 16, 2008; and the Office Action dated June 2, 2008, page 5).

Nonetheless, Applicants respectfully submit that each of Andersson (again) and GB ‘303 fails to teach each and every element of Applicants’ claimed invention with the requisite specificity necessary to support an anticipation rejection under 35 U.S.C. §102.

Applicants respectfully submit that claims 14 and 23 (and all claims depending from claim 14) are directed to silica sols:

- having a specified BET surface area,
- a specified percent by weight content of guanidinium ions,
- a specified percent by weight content of SiO<sub>2</sub>, and
- which are free of amine.

**Applicants respectfully submit that the Examiner has failed to point to any specific teaching or suggestion in either of the cited references which discloses a silica sol having each of the claimed properties and which is free of amine.**

It is extremely well-settled that in order to support an anticipation rejection under 35 U.S.C. §102, each and every element of the claimed invention must be disclosed, either explicitly or implicitly, in a single reference.

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<sup>1</sup> It is noted that in the new Office Action, the Examiner also refers to British Patent No. 1202303 as “Yates” and “Du Pont . . .” interchangeably. Herein, Applicants refer to the reference solely as “GB ‘303” for clarity.

Neither Andersson or GB '303 teaches a silica sol containing the recited amount of guanidinium ions, **up to 15% by weight of SiO<sub>2</sub>, and which is free of amine**. The Examiner has failed to point to any teaching in the references which discloses a silica sol free of amine and containing guanidinium ions and SiO<sub>2</sub> in the recited amounts. Moreover, even if the Examiner's repeated "inherency" contentions concerning the claimed BET surface area, zeta potential, etc. were properly supported with the legally required rationale tending to show that the supposed teachings "*necessarily follow*" from the disclosure of the cited art, which they are not, **the references would still fail to teach or suggest the claimed presence of guanidinium ions, up to 15% SiO<sub>2</sub>, and the absence of amine**.

Andersson is directed to aqueous silica sols having a surface area of from 950 m<sup>2</sup>/g to 1,800 m<sup>2</sup>/g, pH in the range of from 10.5 to 12.0, from 10% to 30% by weight of SiO<sub>2</sub>, ***wherein the sol is stabilized with an amine***. Andersson does not disclose a silica sol comprising a 0.05 to 15 % by weight of guanidinium ions. In fact, Andersson does not even disclose the use of a guanidinium compound at all. Furthermore, not only does Andersson fail to teach a silica sol which is free of amine, Andersson specifically INCLUDES an amine.

GB '303 discloses a process for preparing a water soluble guanidine silicate by contacting guanidine hydroxide with silicate ions. The resulting product is an amorphous, ionic guanidine silicate having a mole ratio of guanidinium ions to silicate ions of from 1.5 to 0.65, ***and being soluble in water to the extent of at least 15 % of silica*** based on the total weight of the solution. The product described by GB '303 is said to be soluble in water to the extent that its aqueous solutions have a silica concentration of ***at least 15 %*** by weight and usually ***well in excess of 15 %***. (*See, e.g.*, GB '303, p. 1, lines 40-43). Moreover, GB '303 is completely silent as to the content by weight of guanidinium ions when the product is dissolved in water.

GB '303 clearly describes products prepared at concentrations in excess of 15 % by weight of silica in solution. (*See, e.g.*, GB '303, p. 3, lines 127-130). Solutions which are more dilute in silica than this are said to be stable for "reasonable periods of time." (*See, id.*, at p. 4, lines 1-3). However, if the silica content is too low, GB '303 describes a tendency to precipitate water-insoluble crystalline guanidine silicates from such compositions. (*See, id.*, at p.

4, lines 4-7). GB '303 states that instability can be avoided by concentrating to silica concentrations *in excess of 15 %* by weight with concentrations of 20 % by weight being preferred. (*See, id.*, at p. 4, lines 10-14). Thus, GB '303 discloses compositions virtually opposite of **the claimed silica sols having a SiO<sub>2</sub>-concentration of 15 % or less**.

Neither reference discloses a silica sol which contains guanidinium ions, up to 15% by weight SiO<sub>2</sub>, and which are free of amine. Thus, Applicants submit that neither Andersson or GB '303 anticipates the claimed invention. Reconsideration and withdrawal of the rejections are respectfully requested.

Rejection Under 35 U.S.C. §103(a):

In the new Office Action, the Examiner rejects claims 1-12 and 22 under 35 U.S.C. §103(a), as being unpatentable over GB '303, in view of Andersson. Applicants respectfully traverse the Examiner's rejection and the arguments and contentions set forth in support thereof for at least the following reasons.

First, as previously argued against the Examiner's earlier §103(a) rejections (all of which were similar, successfully overcome and subsequently withdrawn), the cited combination of GB '303 and Andersson fails to teach or suggest the reacting of a fresh silica sol with *guanidine carbonate*.

GB '303 very clearly states that the guanidinium ion to be used is *guanidine hydroxide*, not just any guanidinium ion. In fact, the specific examples disclosed in GB '303 relate to the addition of amorphous silica to *guanidine hydroxide* in order to obtain the final product. The guanidine hydroxide is prepared by the precipitation of calcium carbonate from a solution of guanidine carbonate by the addition of calcium hydroxide. Thus, it is clear that GB '303 does not contemplate the use of guanidine carbonate as a starting material for obtaining the final product. On the contrary, all examples show the *conversion of guanidine carbonate into guanidine hydroxide before initiating the reaction with the silica powder*. Thus, GB '303 completely teaches away from the use of guanidine carbonate as a starting material in the reaction.

It is noted that GB '303 mentions the possibility of obtaining a guanidine silicate and calcium carbonate as products by reacting a solution of guanidine carbonate with a suspension of a calcium-silicon *alloy*. (See, e.g., GB '303, p. 2, l. 96-101). However, such a process, involving an *alloy* as starting material, is completely different from the present invention, which relates to reacting *a fresh sol which is an aqueous system having an SiO<sub>2</sub> content of from 4 to 8% by weight and a pH of from 2 to 4* with guanidine carbonate.

Processes according to Applicants' claimed invention require no further stabilization of the silica sol. This is *in direct contrast to* the process of GB '303, which clearly indicates that the resulting solutions have stability problems, in particular for lower silica contents. (See, e.g., GB '303, p. 4, l. 1-7). This is further illustrated by the fact that guanidine silicate of GB '303 shall preferably be combined "in stable mixtures" with water-soluble alkali metal silicates (see, e.g., *id.* at p. 4, l. 56-60). This is a method which is *conventionally* used for stabilizing silica sols. (See, e.g., Applicants' Specification, p. 2, lines 1-3).

Thus, the process of GB '303 is different from the present invention, and in particular there is no suggestion in GB '303 to use guanidine carbonate as a starting material. On the contrary, GB '303 completely teaches against the use of guanidine carbonate, instead of guanidine hydroxide as a starting material. Moreover, the present inventors have surprisingly found that the reaction of a fresh sol (an aqueous system having an SiO<sub>2</sub> content of from 4 to 8% by weight and a pH of from 2 to 4) with guanidine carbonate provides a stable silica sol.

As discussed above, and in Applicants' previous responses, Andersson an aqueous silica sol having a surface area of from 950 m<sup>2</sup>/g to 1,800 m<sup>2</sup>/g, pH in the range of from 10.5 to 12.0, from 10% to 30% by weight of SiO<sub>2</sub> and the sol being stabilized with an amine. However, Andersson does not disclose any references to a silica sol comprising a 0.05 to 15 % by weight of guanidinium ions. In fact, Andersson does not suggest the use of a guanidinium compound at all. Andersson also does not teach or suggest a silica sol which is *free of amine*.

Applicants respectfully submit that the cited combination of GB '303 and Andersson fails to satisfy the criteria necessary to establish *prima facie* obviousness. Neither reference even suggests reaction of a fresh sol with guanidine carbonate, and there is no reason why one of ordinary skill in the art would modify the references to use such a starting material AND exclude amines. Reconsideration and withdrawal of the rejection as to claims 1-12 and 21 are respectfully requested.

Conclusion:

Applicants respectfully submit that all pending claims patentably distinguish over the prior art of record, and that all claims comply with the requirements of 35 U.S.C. §112, second paragraph. Thus, withdrawal of all rejections and a Notice of Allowance are respectfully requested.

Respectfully submitted,

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